



**US Army Corps
of Engineers®**
Rock Island District

LOCKS & DAM 14 (PLEASANT VALLEY, IOWA) MISSISSIPPI RIVER

General Contractors:

Lock and Dam: Central Engineering Company, Davenport, Iowa

Construction: 1935-1940

Congressional Districts: IA-1; IL-17

DESCRIPTION

Lock and Dam 14 is 4 miles below LeClaire, Iowa, and 493.3 miles above the confluence of the Mississippi and Ohio rivers. The site is also 3.6 miles below the head of the notorious, rock-bedded, Rock Island Rapids. The LeClaire Lock and the remains of the LeClaire Lateral Canal, built in 1921-1924 to bypass this treacherous stretch of river, are located along the Iowa shore.

The movable dam has 13 non-submersible Tainter gates (20-feet high and 60-foot long) and four submersible roller gates (20-feet high and 100-foot long). The dam system also includes an earth and sand-filled dike.

The main lock's dimensions are 110 by 600 feet. Normal upper pool elevation is 572 feet, about 15 feet above the tail waters of the dam at low water. When both pools are at their normal elevation, the difference is reduced to 11 feet or less. The dimensions of the LeClaire Lock, which is used as an auxiliary lock, are 80 by 320 feet, with a low-water depth of eight feet at the upper sill and seven feet at the lower sill. The main lock's maximum lift is 11 feet with an average lift of 9.8 feet. It takes approximately 8 minutes to fill or empty the main lock. It takes 9 hours for water to travel from Lock and Dam 13, in Fulton, Iowa, to Lock and Dam 14.

HISTORY/SIGNIFICANCE

The lock opened in 1940. The Corps built the oldest elements of this complex between 1921 and 1924, during the six-foot channel project. As part of that channelization, the Corps built a longitudinal dam paralleling the Iowa shore from the head of the Rock Island Rapids at LeClaire, to the head of Smith's Island. The dam formed the riverward wall of the LeClaire Canal, by which vessels could bypass the rapids. The Iowa shore served as the canal's landwall. Most of the longitudinal dam was submerged when Dam 14 was built; however, a portion of the original canal near the dam is still used as a mooring and storage site. The lock and dam elements of the complex were completed at a cost of \$6,439,000.

ANNUAL TONNAGE (10-YEAR HISTORICAL)

<u>Year</u>	<u>Tons</u>	<u>Year</u>	<u>Tons</u>
1998	27,277,374	2003	24,224,248
1999	30,839,734	2004	20,626,075
2000	28,348,136	2005	20,819,999
2001	24,264,635	2006	21,934,232
2002	28,428,345	2007	20,675,817

(MORE INFORMATION ON THE REVERSE SIDE)

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COMMODITY TONNAGE & LOCKAGES (2007)

Coal	3,972,497	<u>Subtotals:</u>	
Petroleum	412,515		
Chemicals	2,560,897	Grain	9,279,079
Crude Materials	2,589,334	Steel	215,452
Manufactured Goods	697,442		
Farm Products	10,413,618	<u>Lockages:</u>	
Manufactured Machinery	21,294		
Waste Material	600	Boats:	3,304
Containers & Pallets	1,624	Cuts:	4,099
Unknown	5,996		

CURRENT MAINTENANCE ISSUES – LOCK & DAM 14

Item (Critical Rank Order)

Systemic Bulkhead Slots
Systemic Miter Gate Replacement
Repair Roller End Shields & Seals - Dam
Structural Repairs - Tainter and Roller Gates Exterior
Systemic - Crane Rail Adjustments - Dam
Modify Downstream Approach
Repair Miter Gate SPD Reducer
Systemic Repair Auxiliary Lock Gates, Including New Bulkhead Slots
Systemic Tainter Valve Replacement
Dredge Main Lock Upstream Approach

Dam Rehabilitation Evaluation Report
Painting Under Dam Service Bridge
Replacing 70-Year Old Lock Pontoon Barge (Work Flats)
Bridge Crane Repairs to Lattice Boom & Crane Undercarriage
Repairs to Auxiliary Lock 14 - Machinery Bases
Upper Bullnose Repair
Auxiliary Lock Valves Rehabilitation
Main Lock Chamber - Armoring
Systemic - Standby Generator and Compressor Enclosures

TOTAL ESTIMATED COST: \$29,200,000

The existing 9-foot Channel Navigation Project was largely constructed in the 1930's and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

More than 580 manufacturing facilities, terminals, and docks ship and receive tonnage in the Upper Mississippi River basin. In 2005, the system moved more than 160 million tons of commercial cargo worth roughly \$28.5 billion. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 870 large semi-trucks (22,500 cargo tons, 787,500 bushels, or 6,804,000 gallons). Annually, the project generates an estimated \$1 billion of transportation cost savings compared with the operation and maintenance costs of approximately \$115 million.

In constant dollar terms, operations and maintenance funding for the system has been largely flat or declining for decades, while maintenance needs of the aging infrastructure increase. This is adversely affecting reliability of the system. Long-established programs for preventative maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the nature of a lock malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

POINT OF CONTACT

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